TRAMPOLINE SYSTEM

BACKGROUND

Trampoline accidents while rare can be minimized. Users landing on the frame can cause frame failure leading to frame collapse and user injury. Users landing on the springs can also injure themselves, but a trampoline pad can protect users. The trampoline pad protects a user from landing directly on the springs or frame of the trampoline. The trampoline pad has traditionally been attached to a trampoline frame by straps to soften a landing on the trampoline frame or trampoline springs. Many trampoline pads experience concentrated stress at the junction of the trampoline pad and the trampoline pad strap leading to premature wear.

The problem of users landing on the rigid trampoline frame has been addressed by various means. United States Patent 6,001,045 and 6,139,474 to Gift shows a trampoline safety pad that includes a closed cell to cover the springs and trampoline frame. Other inventions have exchanged steel springs for elastic fabric straps to minimize user injury.

While a properly designed, properly assembled and properly loaded system of the prior art provides a small chance of structural failure and injury; a design is desired that would further minimize the chance of structural failure.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure one is a bottom view of the trampoline strap and frame.

Figure two is a prospective view of the trampoline pad.

Figure three is a side view of the trampoline.

Figure four is a front view of the welded T junction.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The trampoline frame supports the bed 15, pad 10, springs 90 and user. The trampoline frame is commonly circular in the top plan configuration and made of horizontal tubular members 30, having a number of vertical support legs attached to the horizontal tubular members. The trampoline frame can also be rectangular. The trampoline frame retains a plurality of springs

that in turn retain the trampoline surface. The present invention pad 6 rests upon the trampoline frame and springs. The trampoline frame vertical and horizontal members are commonly made of the same material and diameter.

The present invention trampoline straps 70, 72, Fig. 1, connects a trampoline pad body 10 to a trampoline frame 30. The trampoline pad 10 includes a strap junction 60 or other affixation that may be reinforced with a layer of fabric stitched on top of both the straps. The trampoline strap is made of elastic fabric material. The strap junction 60 is the location where a strap is stitched to the trampoline pad 10. The top strap 72 and bottom strap 70 fit around the trampoline frame 30. The pair of straps including the top strap and to the bottom strap are both stitched to the trampoline pad body 10. The trampoline pad limiting member 40 is formed so that the pair of straps are stitched together as a single strap for a length of connection. A user grasps the limiting member 40 and pulls it against the trampoline frame. A gap 50 between the limiting member 40 and the junction 60 provides an elastic shock absorbing slack spacing 50 between the pad and the frame. The straps can be tied around the trampoline frame to form a retaining connection. A user may tie the straps around the horizontal portion as seen in Fig. 3, or the vertical portion of the trampoline frame. A user may also tie the straps around the junction between the vertical and horizontal portion of the trampoline frame.

A user subsequently uses a retaining connection 76 and connects the bottom strap 70 to the top strap 72 at a location away from the frame of the trampoline 30. The retaining connection 76 can be a knot or a strap retaining device such as a buckle, a clip or hook and loop tape. For the purposes of the present device, the buckle, clip and knot are equivalent 76. A user may grasp the top and bottom strap and manually tie a knot to form the retaining connection 76.

A user ties the trampoline strap 70, 72 to the trampoline frame 30. The upper portion of the trampoline frame 30 is formed of horizontal members encircling the trampoline bed 15. As a user uses the trampoline, the user may land on the trampoline pad 10. The trampoline pad 10 is restrained by trampoline strap that has a slack space 50 that is elastic, and maintains the proper position of the trampoline pad 10 without tearing from the pad.

The trampoline frame is formed of vertical members 85 and horizontal members 30. The vertical 85 and horizontal 30 members travel around the periphery of the trampoline bed 15. Horizontal members 30 are supported by vertical members. The horizontal members 30 connect to vertical members at a T joint connector Fig. 4 provided for interconnecting adjacent ends of each top member section. The vertical members support the T joint connectors. Supporting vertical members are generally vertical, but they may be angled also. Here, the term vertical member also includes a member that is substantially vertical. Angled supporting vertical members should be generally vertical with more than a 45 degree angle, but do not have to be 90 degrees to the ground.

The force of a user landing on the trampoline pad puts stress on the trampoline frame. The pad strap gap has an elastic slack space that absorbs some of the stress. The frame absorbs the remainder of the stress. The trampoline frame is reinforced at its T joint connections by a plurality of welding plates acting as flange braces. The flange brace plate 80 is placed on both sides of the T joint connector.

A weld plate 80 is approximately square and formed around the side of the T connector. The plate preferably includes a single hole 75 in the middle of the plate. The plate can be formed of a sheet of metal. The plate can be pressed into a shape conforming to the T connector. The plate has a periphery comprising the top edge, the bottom edge and side edges. The weld plate has a periphery capable of being welded against the T joint connector. The aperture 75 in the plate can be circular. The aperture 75 provides an edge allowing a plug weld 75 between the aperture 75 and the vertical or horizontal frame member.

The weld plate is preferably 2 mm thick before being formed into the profile of the T connector. The weld plate profile is preferably 6 mm thick after being formed into a profile of the T connector. Thus, the plate 80 preferably does not protrude from the T connector member more than 2mm. The profile of the plate has a straight and flat upper edge with a curved lower edge having a radius proportional to the radius of the vertical member support. The lower curved edge conforms to the vertical member support and the flat upper edge conforms to the horizontal

member support. The horizontal and vertical member supports are typically tubular and formed of metal.

The arc weld is preferable to weld the vertical 85 and horizontal members 30. The arc weld between the horizontal and vertical members preferably maintains an intact horizontal member while cutting a section of vertical member and welding the vertical member to the horizontal member. In figure four, the vertical member 85 is shaped to conform to the horizontal member 30. The first weld is between the vertical and horizontal member interface. The second weld is on the plate 80. The plate is shown as a rectangular piece of metal conforming to the external profile of the junction between the horizontal and vertical member. The welding plate 80 preferably receives a top weld along the top edge, and a bottom weld along the bottom edge as shown in Fig 4. The welding plate should be roughly rectangular. Thus, the plate has a T-junction shape so that it lies flat against the profile of the trampoline frame. Preferably, the plate 80 and junction receive surface treatments such as paint so that the plate 80 is not cosmetically noticeable. A plug weld 75 on the hole 75 increases the connection between the plate and the T-junction. The plug weld 75 overlaps the junction so that the plug weld 75 protrudes through the plate and welds the plate to the junction.

Alternatively, a wire 'mig' welder can be used to form a circumferential weld along the edge of the plate. The plate can be welded in this fashion along the top, bottom, left and right sides. When a mig welder is used for a circumferential weld, the plug weld is optional.

The foregoing describes the preferred embodiments of the invention and modifications may be made without departing from the spirit and scope of the invention as set forth in the following claims.

CALL OUT LIST OF ELEMENTS

10 Trampoline Pad

15 Trampoline Bed

20 Trampoline Pad Strap

30 Trampoline Frame

30 Horizontal Member

40 Trampoline Pad Limiting Member

50 Pad Strap Gap

60 Pad Strap Affixation

70 Bottom Strap

72 Top Strap

75 Plug Weld On T Joint

76 Retaining Connection

80 Flange Brace Plate

85 Vertical Member

90 Springs